# ANVIK BULK FUEL PROJECT
# FINAL REPORT

## 1. PROJECT DESCRIPTION

### A. Location & Population

This project is located in ANVIK, Alaska, a community of 108 persons situated on the Anvik River in interior Alaska.

### B. Project Participants

The primary participant for this facility upgrade is AVEC, which owns and operates the existing diesel powered generation plant and the bulk fuel storage tanks. A fill pipeline extension was added after construction was started to connect to the Iditarod Area School District's fuel farm.

### C. Project Justification

The original AVEC facility was located south of the Anvik River in the flood plain and consequently suffered flood damage on several occasions. In 1996/97 AVEC moved the power plant to a new higher site on the north side of the river, approximately 200' from the school and adjacent to the air strip. The existing tanks were over 20 years old, being vertical in configuration with bolt on lids. They allowed for evaporative losses as well as for precipitation and condensation to enter. The piping, owned by others was all coupled with threaded connections and subject to leakage and the fuel barge had to anchor in the Yukon River's current and connect to the land fill line by long portable hose. The fill pipeline was marginally functional, being undersized and aligned in a manner that made the fill time from the delivery barge very slow. It too was 20 years old and was constructed of a non-standard pipe grade, partially buried in the airport runway without cathodic protection. There was no security fencing around the facility. The existing storage capacity was 51,812 gal of #1 diesel fuel. The 10 year future projection indicates a usable capacity need of 58,000 gals (157% existing usable capacity). Using standard 11' diameter by 38' long standard tanks this requirement was met by allocation of three tanks to the project.

### D. Project Description and Components

The project consisted of a renovated bulk fuel storage facility for AVEC, consisting of three (3) new 27,000 single wall horizontal tanks (replacing 6 old vertical tanks) installed within a lined earthen berm dike at the location of the existing tank farm, a new above ground fill pipeline from the community's fuel farm to serve both the AVEC and Iditarod Area School District's fuel farms, and a new piping manifold. A new security fence was installed around the power plant and the tank farm.

| Component | Quantity | Description | Notes |
|---|---|---|---|
| Fuel Storage Tanks | 3 ea | 27,000 horizontal, single wall | Skid mounted on timber sleepers |
| 4" Fill Line | 3,450 lf | Sch. 80 & 40; buried & above ground | A/G on sono-tube supports |
| 1"2" & 3" Fill Line | 220 lf | Sch. 40; above ground | On timber sleepers |

## 2. PROJECT DEVELOPMENT APPROACH & TIMELINE SNAPSHOT

A. **Funding:** This renovation and upgrade bulk fuel project was encompassed within the original grant request to the Denali Commission by AVEC. It received funding in the amount of $472,500, as a part of Grant Funds Award 0023-DC-2001-15, March 6, 2001. AVEC provided a cash match of $52,500 for total initial fund amount of $525,000. Subsequent funding awards totaling $153,414 were made by the Denali Commission, making the total funding $678,414. The Denali grants are defined in table below:

| Funding Document | Component | Date |
|---|---|---|
| 0023-DC-2001-15 | Base | March 6, 2001 |
| 0023-DC-2001-15 | Amendment #1 | April 22, 2002 |
| 0023-DC-2001-15 | Amendment #2 | August 12, 2002 |

B. **Design:** The design consultant firm of Alaska Energy and Engineering (AE&E) was requested in January 2001 to present a proposal to develop a Conceptual Design Report. The final CDR was developed in February 2002, with design development following. Construction documents were finalized May 23, 2002. Milestones associated with the Design of the project are provided in table following.

| Design Phase | Milestone | Date |
|---|---|---|
| Business Plan | None Required | NA |
| CDR | Contract & NTP | February 12, 2001 |
| | Final Issue | January 21, 2002 |
| Design Development | Contract & NTP | January 31, 2002 |
| | Final Issue | Undocumented |
| Final Design & Const Docs | NTP | Undocumented |
| | Construction Documents | May 23, 2002 |

C. **Construction:** The design consultant firm of AE&E was also contracted to perform procurement and construction administration tasks for the construction phase. A site construction supervisor was hired by the City of Anvik at the recommendation of AE&E, and all labor to perform the construction tasks were hired locally with the exception of the certified welders. Payroll was administered by the accounting firm of Mikunda, Cottrell on behalf of the City of Anvik. Milestones associated with the Construction of the project are provided in table following.

| Construction Phase | Milestone | Date |
|---|---|---|
| Pre-construction | Permitting & Site Control | January thru April 2002 |
| | Procurement (Tanks) | March 15, 2002 |
| | Material Delivery | March 15 – July 6, 2002 |
| Construction | Tank Removal & Site Preparation | June 15, 2002 |
| | Substantial Completion | October 10, 2002 |
| Turnover & Commission | Fuel Delivery | October 15, 2002 |

**D. Total Project Time - Design & Construct:**

Start: February 12, 2001
Complete: October 15, 2002

**Total Project Time: 610 cal days (20.5 mo.)**

## 3. PROJECT FUNDING, DEVELOPMENT COSTS, AND UNITS

### A. Funding

Funding was provided by grants from the Denali Commission with an in-kind cash contribution by AVEC. For this project, funding was provided in lump sum amounts, with no designation for allocations to project development components (i.e. design, construction)

| Date | Denali Funding Award | Denali | AVEC | Total |
|---|---|---|---|---|
| March 6, 2001 | 0023-DC-2001-I5 | $472,500 | $52,500 | $525,000 |
| Apr 22, 2002 | 0049-DC-2002-I2 Amendment #1 | $41,258 | $0 | $41,258 |
| Aug 12, 2002 | 0049-DC-2002-I2 Amendment #2 | $112,156 | $0 | $112,156 |
| **Total Funding** | | **$625,914** | **$52,500** | **$678,414** |

### B. Development Costs

Project development costs were tracked for each of the categories shown in the table below. Since the funding grants were awarded in lump sum amounts, there were not funding amounts (budgets) for each category. Thus there is no variance of actual cost vs. budget for this project. The percent of total project cost for each category of project cost is shown

| Component | Funding Budget | Actual Funding | Actual Project Cost | Funding Budget Variance | % of Actual Funding | % of Final Cost |
|---|---|---|---|---|---|---|
| Business Plan | NA | NA | NA | NA | NA | NA |
| Planning & Design | $60,000 | (unknown) | $40,405 | ($19,595) | (unknown) | 6.8% |
| Construction | $524,419 | (unknown) | $459,443 | ($64,976) | (unknown) | 77.5% |
| Const. Mgmt (AE&E) | $48,000 | (unknown) | $50,543 | $2,543 | (unknown) | 8.5% |
| AVEC Direct Costs | $6,500 | (unknown) | $16,548 | $10,048 | (unknown) | 2.8% |
| AVEC Consultants | $12,213 | (unknown) | $3,441 | ($8,772) | (unknown) | 0.6% |
| Project Mgmt (AVEC) | $27,282 | (unknown) | $22,298 | ($4,984) | (unknown) | 3.8% |
| Other | $0 | (unknown) | $0 | $0 | (unknown) | 0.0% |
| **TOTAL** | **$678,414** | **$678,414** | **$592,678** | **($85,736)** | **87%** | **100%** |

**Project Cost Summary Analysis:**
This project **underran** the available funding **$85,736 (12.6%)** as appropriated to this project.

**Final Unit Costs & Percentages**

It is useful to compare unit costs and percentages of cost against the total project cost for like components of like projects. The following table illustrates some salient unit prices and percentages.

| COMPLETED AMOUNTS | | Const Cost $521,975 | Project Cost $592,678 | Gal Storage 81,000 |
|---|---|---|---|---|
| COMPLETED PERCENTS AND UNIT COSTS | | | | |
| Item | Item Cost | % | % | $/Gal |
| **Business Plan** | NA | NA | NA | NA |
| **Design** | | | | |
| CDR | 8,100 | 1.2% | 1.1% | $0.10 |
| Design Dev | 32,305 | 5.0% | 4.4% | $0.40 |
| DESIGN TOTAL | $40,405 | 6.2% | 5.6% | $0.50 |
| **Construction** | | | | |
| Field Direct Costs | 459,443 | 70.8% | 63.3% | $5.67 |
| AVEC Direct Costs | 11,989 | 1.8% | 1.7% | $0.15 |
| Const Admin | 50,543 | 7.8% | 7.0% | $0.62 |
| CONSTRUCTION TOTAL | $521,975 | 80.4% | 71.9% | $6.44 |
| **Program Management** | | | | |
| AVEC & Consultants | $30,298 | 4.7% | 4.2% | $0.37 |
| PROG MGMT TOTAL | $30,298 | 4.7% | 4.2% | $0.37 |
| **GRAND TOTALS** | **$592,678** | | | **$7.32** |
| | | % Const Cost | % Project | $/Gal Storage |
| **AVEC Cash Match** | **$45,865.00** | **8.8%** | **7.7%** | **$0.57** |
| | | | | |
| Denali Commission Cost Benchmark for Bulk Fuel Facilities ($$/GAL) | | | | $12 - $14 |
| Completed Project ($/gal) | | | | **$7.32** |
| Variance (fm median-$/gal) | | | | **$5.68** |
| % Variance (under) | | | | **44%** |

## 4. Local Hire & Training

### a. Local Hire

A major objective of AVEC, its Construction Management Contractor, and the Denali Commission is to utilize local residents in the execution of the project development to the maximum extent possible. Anvik accomplished this goal well in all three categories: 1) Persons Hired; 2) Local Economy Payroll; and 3) Percentage of total Work Hours.

| | Employees | | Payroll $$ | | Work Hours | |
|---|---|---|---|---|---|---|
| | Number | % | Payroll $$ | % | Hours | % |
| Total | 11 | 100% | $157,728 | 100% | 6420 | 100% |
| Local | 9 | 82% | $137,421 | 87% | 5843 | 91% |
| Non-Local | 2 | 18% | $20,308 | 13% | 578 | 9% |

### b. Job Training

A second objective of AVEC, its Construction Management Contractor, and the Denali Commission is to training local residents of the community in job skills that can be utilized on the project within the village. For this project, there were no skills required, other than pipe welding for which no skilled tradesmen were residing in the village. There was no training required.

| Village | Project | Training | | | Resulting |
|---|---|---|---|---|---|
| | Type | No. | Trades | Location | Const Jobs |
| TRAINING TO DATE | | | | | |
| ANVIK | Bulk Fuel Storage & Distribution pipelines | 0 | None | | None |